FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF LIFE SCIENCES
FIRST SEMESTER EXAMINATION, 2018/2019 SESSION
COURSE: INTRODUCTION TO MICROBIOLOGY I
COURSE CODE: MCB 211 (2 units)

INTRUCTIONS: Answer Any **THREE** Questions. All Question carry equal marks

TIME: $1^1/_2$ Hours

1 (a) Draw a well labelled bacteria structure.
(b) In a tabular form, list the function and chemical composition, of five listed part in (a) above

2 Write short note on any five of the following:

i. Ecology

ii. Environment.

iii. Niche

iv. Amensalism

v. Commensalism

vi. Mutualism

vii. Limiting Factor.

3 (a) Define the following: (a) Microbiology (b) Microorganisms

(b) Microorganisms can be classified into three (3) group namely;

(c) Write the Koch's postulate.

4 (a) Who is the is the father of Microbiology and name three (3) of his contributions

(b) Write short note on *Parakaryon myojinensis*

(c) List five (5) importance of Microbiology to man

5 (a) Fill in the table with appropriate statement

S/NO.	NAMES OF MICROORGANISMS	ROLES
1	*Streptomyces griseus*	--------
2	*Bacillus megatherium*	---------
3	*Taxomyces* spp	---------
4	*Burkhoderia cepacian*	----------
5	----------	Tularemia
6	----------	Q fever
7	----------	Syphilis
8	----------	Tinea capitis
9	----------	Histoplasmosis
10	----------	Typhoid fever
11	*Nitrococcus* spp	----------
12	*Penicillium patulum*	----------
13	*Puccinia chondrillina*	----------
14	*Cyanophyta nostoc*	----------
15	*Ascophyllum* spp	----------

(b) Why would you resent being a microbiologist?

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
FIRST SEMESTER EXAMINATION, 2018/2019 SESSION
GENERAL MICROBIOLOGY (MCB 311), 3 CREDIT UNITS

INSTRUCTION: ANWER ANY FIVE (5) QUESTIONS

TIME ALLOWED: 2Hours

1a). Briefly highlight acid-fast staining procedures
1b). Why are acid-fast stains useful?
1c). How does negative staining help in visualizing capsules?

2a). State the purpose of each of the following reagents in a differential staining procedure: (i). Primary stain, (ii). Mordant, (iii). Decolorizing agent, (iv). Counterstain

2b). Which is the most crucial step in the performance of the Gram staining procedures? Explain.
2c) What are the advantages of differential staining procedures over the simples staining technique?

3a) Define the term virus
3b) Highlight the basic stages involved in the replication of a virion.

4) Discuss the economic importance of protozoa

5a) List 5 environmental factors that affect microbial growth and survival?
5b What is the magnification of the oil immersion objective?

6a) Define the following terms: (i) extremophiles (ii) isotonic solution, (iii) facultative anaerobes, (iv) aerotolerant
6b) What is the unit of micrometry in bacteriology

7a) State Koch's postulates used to relate a specific microorganism to a specific disease.
7b) State 5 differences between Prokaryotic and Eukaryotic cells

Federal University of Technology, Minna
Department of Microbiology
First Semester Examination
2018/2019 Session

Course Title: Principles of Disinfection & Sterilization
Course Code : MCB 312
Time allowed: $1^1/_2$ Hours
Instruction: Answer 3 questions in all. Attempt one question only in section A.

Section A (Attempt 1 question only in this section)

1. (a) Define microbial growth.
   (b) Outline methods used to measure microbial growth.
2. (a) Describe (i) disinfection (ii) sterilization (iii) disinfectants (iv) antiseptics
   (b) Explain methods of (i) pasteurization (ii) Tyndallization.

Section B (Attempt 2 questions in this section)

3. Write short notes on the following with emphasis on their mechanism of action.

(i) Alkylating agent (ii) Plant Alkaloids (iii) Antimetabolites (iv) Antitumor Antibiotics

4. Viruses were discovered in a liquid medium. As a microbiologist, explain how you would handle the virus to ensure safety of your product.
5. (a) Define drug resistance and mention three ways in which micro organisms acquire resistance.

   (b) Mention five major steps in the kirby-bauer disc diffusion method of determining microbial susceptibility

   (c) What is minimum inhibitory concentration? How can it be determined?

Federal University of Technology, Minna
Department of Microbiology
First Semester Examination
2018/2019 Session

Course Title: Principles of Disinfection & Sterilization
Course Code : MCB 312
Time allowed: $1^1/_2$ Hours
Instruction: Answer 3 questions in all. Attempt one question only in section A.

Section A (Attempt 1 question only in this section)

6. (a) Define microbial growth.

   (b) Outline methods used to measure microbial growth.
7. (a) Describe (i) disinfection (ii) sterilization (iii) disinfectants (iv) antiseptics

   (c) Explain methods of (i) pasteurization (ii) Tyndallization.

Section B (Attempt 2 questions in this section)

8. Write short notes on the following with emphasis on their mechanism of action.

   (ii) Alkylating agent (ii) Plant Alkaloids (iii) Antimetabolites (iv) Antitumor Antibiotics

9. Viruses were discovered in a liquid medium. As a microbiologist, explain how you would handle the virus to ensure safety of your product.
10. (a) Define drug resistance and mention three ways in which micro organisms acquire resistance.
    (c) Mention five major steps in the kirby-bauer disc diffusion method of determining microbial susceptibility
    (c) What is minimum inhibitory concentration? How can it be determined?

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

DEPARTMENT OF MICROBIOLOGY

FIRST SEMESTER EXAMINATION, 2018/2019 SESSION

FOOD MICROBIOLOGY (MCB 412), 3 UNITS

INSTRUCTIONS: Answer any **FIVE Questions**.

Time Allowed: 2Hours

1. Discuss various microbial spoilage associated with eggs.
2. Give a description of suitable techniques for detecting microbial presence in the following food products: fruits and vegetables, evaporated milk and raw meat.
3. a. Explain how the following factors affect microbial activities in food;
    - Water activity
    - Antimicrobial constituents
    - Biological Structure

    b. What is DNA probe? Why is it significant in microbial food analysis?
4. a. Discuss vividly the biological method of food preservation.
    b. In a tabular form, list five (5) bacterial agents of food borne diseases indicating the important reservoirs, transmission and examples of incriminated food.
5. a. Enumerate the differences between Brucellosis and Salmonellosis.
    b. List and explain with examples the different types of food borne diseases.
6. Describe the procedures involved in the production of any 2 of the following dairy products;

- Yogurt
- Ice cream
- Cheese

7. a. Differentiate between Fumonisin and Aflatoxin.
   b. Describe how the following methods are used in microbial food analysis:
   - Measurement of electrical impedance
   - Membrane filter technique

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

DEPARTMENT OF MICROBIOLOGY

FIRST SEMESTER EXAMINATION, 2018/2019 SESSION

INDUSTRIAL MICROBIOLOGY (MCB 413) 3 UNITS

INSTRUCTIONS: Answer **FIVE Questions** in All; **AT LEAST TWO** from each **Section**.

.**Time Allowed: 2 Hours**

SECTION A

1. (a) Outline the procedures for the isolation of citric acid and amylase producing microorganisms

(b) Describe how liquid nitrogen is used for the preservation of industrial microorganisms

2. (a) What is Industrial Fermentation?

(b) Discuss briefly the five major classification of Industrial Fermentation

3. Industrial Microbiology is a veritable option for economic diversification. Discuss

SECTION B

4. (a) What is industrial microbiology?

(b) Outline the different types of antifoams used in industrial fermentation.

5. Draw a well labeled diagram of an industrial fermentor.

6. (a) Define patent in industrial microbiology.

(b). Outline the principles for good practice of fermentor.

7. Itemize the steps in brewing beer and wine production.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
FIRST SEMESTER EXAMINATION, 2018/2019 SESSION
PRINCIPLES OF EPIDEMIOLOGY & PUBLIC HEALTH (MCB 414), 3UNITS

Instruction: Answer any four questions
Time: 2 Hours

1a. The definition of epidemiology includes the terms ‘‘**distribution’’** and ‘‘**determinants’’**. Explain their meaning and significance.

1b. Describe the chain of infection.

2. Epidemiology involves the study of more than just infectious diseases. Explain.

3a. List four types of epidemiologic information that are useful for influencing public health policy and planning and even individual health decisions.

3b. Define ‘‘**efficacy’’** and ‘‘**effectiveness’’** in relation to the study of public health and epidemiology course and provide examples of each.

4. Write short notes on the following terms: (a) **Epidemic** (b) **Incubating Carrier** (c) **Active Carrier** (d) **Mechanical Transmission** (e) **Primary Prevention**.

5a. Define Zoonosis and provide examples of the various types of zoonotic diseases.

5b. Suggest at least three methods for the prevention and control of zoonosis.

6. Discuss emerging/re-emerging diseases.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
MICROBIOLOGY DEPARTMENT
FIRST SEMESTER EXAMINATION, 2018/2019 SESSION
MICROBIAL GENETICS AND MOLECULAR BIOLOGY (MCB 415) 3 UNITS

INSTRUCTIONS: Answer any **FIVE Questions**
Time Allowed: **2 Hours**

1. What roles do the following play in DNA structure?
i. Hydrogen bonds
ii. Phosphodiester linkages
iii. Hydrophobic bonds
iv. Primosome
v. Replisome
vi. Nucleobase

2. (a) By means of a well labelled diagram explain specialized transduction and its significance in bacterial cell
(b) Define Hfr
(c) What are the effect of mutation on proteins

3. (a) Elucidate the structure of DNA (Diagram is essential)
(b) Compare and contrast DNA and RNA

4. Explain vertical and horizontal gene transfer with specific examples

5. (a.) Define the following:
i. Conjugation
ii. Transduction
iii. Transformation
iv. plasmids
(b.) Which is the most efficient technique for gene transfer? Give reason(s) for your answer

6. (a) Explain the unique characteristics of origin of replication
(b) Differentiate between rolling cycle replication and cellular chromosome replication in bacteria
(c) Differentiate between replication and transcription

7. (a) Explain the significance of DNA
(b) Explain the semi conservative nature DNA replication
(c) Explain post transcriptional processing

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY

FIRST SEMESTER EXAMINATION, 2018/2019 SESSION
SOIL MICROBIOLOGY (MCB 416) 3 CREDIT UNITS

INSTRUCTION: answer **question (1)** and any other four (4) questions.

TIME ALLOWED: 2½ Hours

1) In a tabular form write 4 differences between symbiosis and mutualism.
1b) Define the following terms and give relevant examples (i) competition (ii) commensalism (iii) ammensalism (iv) predation (v) parasitism

2a) Describe the association that exists between *Rhizobium and* legume crop?
2b) Which layer of the soil is the richest in microbial life? Give reasons for your answer.

3a) Describe the microbial mineralization of organic materials under anaerobic conditions.
3b) How does the nature of pollutant determine the rate of microbial degradation of soil organic compounds?

4a) Describe 2 methods you would use to carry out either an *in situ* or *ex situ* bioremediation of a contaminated soil.
4b) Give reasons why soil is lower in oxygen and higher in carbondioxide?

5) Discuss 5 parameters that informed the use of microorganisms as indicators of soil quality.

6) Explain the following terms, giving relevant examples of each:
(i) mesophiles, (ii) psychrophiles (iii) thermophiles
6b) State three (3) importance of soil moisture to soil microorganisms

7a) Differentiate between soil horizon and soil profile
7b) Describe the soil horizon

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF LIFE SCIENCES
DEPARTMENT OF MICROBIOLOGY
FIRST SEMESTER EXAMINATIONS, 2018/2019 SESSION
COURSE TITLE: PATHOGENIC BACTERIOLOGY
COURSE CODE: MCB 511 (3 UNITS)

Instruction: **Answer five (5) questions in all, at least two questions from each section**

Time: **$2^1/_2$ Hours**

SECTION A

1. In a tabular form, compare and contrast endotoxins and exotoxins giving specific example of each.
2. Mention any two Koch's postulates and explain their validity with respect to modern microbiological realities.

3. (a) Draw a representative diagram of a bacterial cell and label appropriately.
   (b) Explain opportunistic infections and give two examples.

4. Write a short note on the genus '*Staphylococcus'*

SECTION B

5. Discuss the process of bacterial pathogenesis.
6. Discuss the various types of virulence factors.
7. Discuss briefly the following terms:
   - (i) Infectivity.
   - (ii) Invasiveness.
   - (iii) Reservoir host.
   - (iv) Lethal dose 50 (LD_{50}).
   - (v) Pathogenicity island.
   - (vi) Final host.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF LIFE SCIENCES
DEPARTMENT OF MICROBIOLOGY
FIRST SEMESTER EXAMINATION 2018/2019 SESSION
FERMENTATION TECHNOLOGY (MCB 512), 3 Units

INSTRUCTIONS: Answer any **Five** (5) Questions, at least two from each Section. **TIME: $2^1/_2$ Hours**

SECTION A

1. (a) Define 'fermentation technology'.
   (b) What is the basic principle involved in industrial fermentation technology?
   (c) Give at least one example of yeasts, molds and bacteria involved in fermentation
   (d) List 10 major products of fermentation technology produced economically on a large scale.
2. (a) What is batch fermentation? Discuss the different phases of microbial growth.
   (b) Describe the process of continuous fermentation using stirred fermenter.

(c) Fermentation technology can be grouped into four major categories. Discuss

3. (a) What is the function of a fermenter?
   (b) Enumerate requirements of a bioreactor
   (c) As a new employee in a brewing industry, you are asked to design bio reactor. What are the important points to consider?

SECTION B

4. (a) A bacterial culture has an initial cell density of 0.5×10^3 cell/ml. Its generational time is 30 minutes. What is the cell density at the end of 1hr 20 minutes?

(b). Assuming a bacterial culture has a doubling time of 40 minutes and allowed to grow so that after 3 hr, it has a final absorbance of 0.03. What is the starting absorbance?

(c). What is the generational time of a bacterial population that increased from 1×10^4 cells to 1×10^7 cells in 4 hr of growth?

(5.) Briefly explain the components of fermentation process

(b). In a tabular form, list the major types of filtration processes with their characteristic features.

6. (a) What are the principles behind the following purification techniques ? :

i. Centrifugation.
ii Gel chromatography.
iii. Affinity chromatography.
iv Ion exchange chromatography.
v. Liquid-liquid extraction.

(b). List and explain the three methods of product formulation.

7. (a) Assuming a bacterial culture has a doubling time of 20 minutes and a starting absorbance of 0.03. How long does it take for the culture to reach a final absorbance of 0.4?

(b) A bacterial culture has an initial cell density of 1×10^2 and after two hours (2hr), it has a cell density of 5.4×10^6, Calculate the followings:

(i) Number of generations.
(ii) Generation time.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF LIFE SCIENCES
DEPARTMENT OF MICROBIOLOGY
FIRST SEMESTER EXAMINATION, 2018/2019 SESSION
GENERAL TOXICOLOGY (MCB 513), 3 CREDIT UNITS

INSTRUCTION: Answer any five (5) questions. **TIME ALLOWED: 2 Hours**

1a) Mention the different types of mechanisms of drug toxicity and discuss any three of them

1b) What are the factors that modulate the effects of toxicants in human body?

2a) Describe the various techniques you would employ to manage acute drug toxicity.

2b) Highlight the factors that can predispose an individual to drug toxicity.

3a) Write short note on any three groups of mycotoxins highlighting their effects on humans.

3b) In a tabular form, highlight the differences between exotoxins and endotoxins based on their properties.

4) Describe the Environmental and Health Risks associated with lead, cadmium and chromium.

5a) Differentiate between biosorption and bioaccumulation of toxicants

5b) How would you control influenza infections?

6) Discuss extensively the various effects associated with solvent poisoning.

7a) Discuss three (3) factors that can influence the effect of pesticides on a given target site.

7b) Enumerate and briefly discuss the types of interactions that occur between ionizing radiation and a living cell.

Federal University of Technology, Minna
School of Life Sciences
Department of Microbiology
First Semester Examination, 2018/2019 Session

Analytical & Quality Control Microbiology (MCB515), 2Units

Instruction: Answer 3 questions in all. Attempt only one question in section A.
Time allowed: $1^1/_2$ Hours

Section A (Attempt only one question in this section)

1. (a) Describe sampling and various forms of sampling.

   (b) Describe levels of food sampling.

   (c) How should food manufacturers and producers carry out sampling?

2. (a) What is a standard?

(b) Write short notes on the following detailing the functions they were created to perform: (i) Standards Organization of Nigeria (SON) (ii) Codex Alimentarius

Section B (Attempt only two questions in this section)

3. (a) Discuss factors affecting quality of microbiological laboratory results

(b) As a newly employed microbiologist in a food manufacturing plant assigned to quality control section, how would you ensure the production area and products are kept from contamination?

(c) Working safely with hazardous chemicals requires proper use of laboratory requirements. Explain.

4. (a) Describe the basic principle of hot air oven and highlight the different types of hot air ovens and their working principles.

b) Describe the procedure you will employ to calibrate a pH meter.

5. (a) How would you detect a named bacterial toxin in food?

b) What are the hazards associated with use of autoclave in Microbiology Laboratory?

c) Highlight the advantages and disadvantages of dry heat sterilization

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SCHOOL OF LIFE SCIENCES

MICROBIOLOGY DEPARTMENT

FIRST SEMESTER EXAMINATION, 2018/2019 SESSION

INTRODUCTION TO BIOTECHNOLOGY (MCB 516), 2 UNITS

INSTRUCTIONS: Answer **THREE Questions** in All; **AT LEAST ONE** from each **Section**.

.**Time Allowed:** **$1^1/_2$ Hours**

SECTION A

11. (a) Is the separation of solids from liquids always necessary before extraction of fermentation products?

(b) Summarize four (4) methods of mechanical disruption of cells to harvest intracellular products.

(c) Outline six (6) factors that will influence your decision in recommending methods of extraction of fermented products.

12. (a) How will you subculture animal cell culture?

(b) What is the difference between transformed, secondary and primary cell culture?

SECTION B

13. (a) Define 'enzyme immobilization'.

(b) What are the techniques involved in the immobilization of enzymes?

14. (a) What is microbial metabolism?

(b) Write short notes on **any two** of the following:

i. Applications of microbial metabolism.

ii. Solid state fermentation.

iii. Kreb's cycle.

SECTION C

15. (a) Define 'biotechnology'

(b) Write short notes on the following:

(i) Blue biotechnology.

(ii) Green biotechnology.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF LIFE SCIENCES
DEPARTMENT OF MICROBIOLOGY
FIRST SEMESTER EXAMINATIONS 2018/2019 SESSION
COURSE TITLE: ENTREPRENEURSHIP
COURSE CODE: MCB 517 (2 UNITS)

INSTRUCTION: Answer any three questions

TIME: $1^1/_2$ Hours

1. Discuss the problems facing entrepreneurs in Nigeria who engage in microbiological and biotechnological ventures.
2. Discuss the future prospects of Entrepreneurial Microbiology in a developing economy.
3. How would you prepare effective microorganisms for use in degrading solid wastes in the environment?
4. (a) Define 'biogass technology'

   (b) Biogass technology is a very good solution to local energy needs. Discuss

5. Discuss Phases I and II composting processes involved in the farming of *Agaricus bisporus*.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF LIFE SCIENCES
FIRST SEMESTER EXAMINATION 2018/2019 SESSION
COURSE: INTRODUCTION TO MICROBIOLOGY II
COURSE CODE: MCB 221 (3 units)

INTRUCTIONS: Answer Any **Five** Questions. All Questions carry equal marks
TIME: 2hr

1 (a) What is ecosystem?
(b) Explain vividly various types of ecosystem.

2. Explain with example any four of the following relationship:

   i. Commensalism
   ii. Amensalism
   iii. Mutualism
   iv. Parasitism
   v. Predation

3. Compare and contrast sterilization and disinfection.

4. Highlight and give the major significance of various physical methods of sterilization.

5. Highlight the steps involved in Gram staining.

6. With the aid of a diagram differentiate between food chain and food web

7. Explain energy flow in an ecosystem

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF LIFE SCIENCES
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION 2018/2019 SESSION
GENERAL MICROBIOLOGY II (MCB321) 3 UNITS

Instructions: Answer five (5) questions in all. Attempt at least one question from each section.
Time: 2 Hrs

Section A

1a. Use the knowledge acquired in water analysis experiment in the laboratory to answer the following questions

i) Explain why Escherichia coli was chosen as the indicator of fecal pollution
ii) what circumstances in human life style made water pollution so serious?
iii) Why did EMB changed color?
iv) What is the importance of testing beaches and pools for coliforms?
v) If you are in the wilderness and do not have a water purifier why is it important to boil your water prior to drinking it?

b) A number of pathogenic microorganisms have enrolled to take advantage of water as vehicle of distribution between hosts. Comment

2a) What is the role of immune system?
b) Define the following terms: i) Immune system ii) Immunology iii) Immunity iv) Immune response v) Antibodies
c) Name components of Immune system

Section B

3 Discuss with illustrations, any two mechanisms of gene transfer in bacteria

4 (a) Explain the flow of genetic information in bacteria
(b) what are the differences between DNA and RNA

5 Write short note on the following; (i) Plasmid Transfer (ii) Mutation (iii) DNA

Section C

6. a Differentiate between infectious diseases and communicable diseases
b. Distinguish between species, serotypes and strains.

7. Write an easy on the infectious diseases caused by Salmonella species highlighting its causative agent, reservoir, signs and symptoms and prevention strategies.

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SCHOOL OF LIFE SCIENCES
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION 2018/2019

COURSE CODE: MCB 322
COURSE TITLE: MYCOLOGY
TIME: 2 hours

INSTRUCTION: *Answer 5 questions in all. Question number one (1)is compulsory.*

1a. List the diseases caused by Candida albicans under the following:

i. Cutaneous candidiasis
ii. Mucocutaneous candidiasis
iii. Systemic candidiasis

b. Discuss any one of i, ii, and iii

2. Write a concise note on the applications of fungi in medicine
3. Immunity to fungal infections can be innate or acquired. Discuss
4. Allergic reactions are produced by many fungi in human under different conditions. Discuss these in terms of the fungi involved, the symptoms, diagnosis and treatment

5a. Write short note on slide culture techniques highlighting its advantage over other fungal microscopy techniques.

b. Tube media are preferred to plated media. Elucidate

6. List the three types of mycelium (hyphae) and discuss the specialized structural appearance that aids in the identification of the hyphae (given specific fungi example)

7a. What is Aspergillosis? Who is most at risk for this opportunistic infection? What problems does it cause in patients that are proned to this disease?

b. Selected features have been used to differentiate between fungi and bacteria. Explain

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF LIFE SCIENCES
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION 2018/2019 SESSION
Course Code: MCB 323
Course Title: Microbial Physiology (3 Units)

Intruction: Answer five (5) questions in all. Attempt at least two questions in each section
Time: **2 Hours**

SECTION A

1a) Differentiate between osmosis and facilitated diffusion in a tabular form.
1b) State the characteristics of transport proteins.

2) Describe the mechanism of nutrient transport by permeases.

3) Write short notes on the following:
(i) Uniporter
(ii) Low molecular weight heat stable proteins.

4) With the aid of a well labelled diagram, discuss the uptake of nutrients by group translocation.

SECTION B

5a. What is water activity? How do microorganisms adapt to the environment of low water activity?
5b. (i) How does oligotrophic environment affect microbial activities?
(ii) Suggest possible ways of cultivating anaerobic microorganisms in the laboratory.

6a. (i) Assuming a bacterial culture that contain 1×10^2 cells at the start of log phase divide every 30 minutes, how many bacterial cells will be there after 6 hrs of exponential growth?
(ii) What is microbial growth?

6b. With the aid of diagrams, describe the prokaryotic cell cycle.

7a. Differentiate between facultative anaerobic and aerotolerant anaerobes

7b. (i) How can you control the pH of a culture medium in the laboratory?
(ii) Explain the mechanism of cell damage by UV radiation and how can it be repaired?

MCB 324 SECOND SEMESTER EXAM QUESTIONS (3 UNITS)

INSTRUCTION: Answer question 1 and any other 4 questions.

1. List out the guiding rules in relation to the under listed using the APA referencing style:
   i) Author
   ii) Date
   iii) Book title
   iv) In-text citation
   v) Reference list.

2. a) Enumerate the different types of serologic tests.
   b) How can relevant papers be sourced for literature surveys and project work?

3. Write concisely on the following as means of biological data presentation; tables and graphs.

4. Rewrite the references below appropriately
   i) Retrieved from https://www.howandwhentoreference.com. Maxwell, BJ 21 May 2017. How and when to reference.
   ii) Spectacular creatures: The amazon rainforest (2nd ed.). Jones, A.P. & Wang L. (2011). San Jose, Costa Rica.
   iii) Improvement of writing and longitudinal study of undergraduate writing performance Openheimer D Zaromb F Pomerantz J R Williams J C & Park Y S 2017. Assessing writing https://doi.org/10.1016/j.asw.2016.11.001

5. a) What are culture media?
   b) Classify the types of culture media with examples.

6. a) Define pure cultures
   b) Enumerate the techniques used to derive pure cultures

7. Write short notes on the following
   i. Turbidimetric measurements
   ii. Catalase test
   iii. Indole test

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION 2018/2019 SESSION
MCB 521 VIROLOGY (3 CREDIT UNITS)
INSTRUCTION: ANSWER ANY FIVE QUESTIONS TIME: 2HOURS

1 Molecular Biologists are with the view that lysogenic phase of viral replication should be considered as an alternative to cloning, what is your opinion?

2 Explain two (2) techniques used for viral cultivation in the laboratory

3 Write short notes on measles under the following headings:
- i. Epidemiology
- ii. Pathogenesis
- iii. Diagnosis

4 Enumerate and explain the steps involved in viral replication

5 Discuss the properties of a viral particle

6 Explain in details the pathological effects and possible control measures of Ebola virus disease.

7 Write briefly on tumor immunology

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

DEPARTMENT OF MICROBIOLOGY

SECOND SEMESTER EXAMINATION 2018/2019 SESSION

MCB 522 PETROLEUM MICROBIOLOGY (2 CREDIT UNITS)

INSTRUCTION: ANSWER ANY THREE QUESTIONS TIME: 1HOUR 30 MINIUTES

1a. Discuss the role of microorganisms in petroleum prospecting

b. Discuss with relevant dates the history of petroleum discovery in Nigeria

2a. Write short notes on any two of the following with relevant structural formulae:

- i. Sulphur compounds in petroleum
- ii. Aromatic hydrocarbons in petroleum
- iii. Oxygen compounds in petroleum

b. Enumerate five characteristics of microorganism that enable them to carry out petroleum degradation in the environment.

3. Discuss microbiology of methanogenesis

4a. How would you control microbial contamination of petroleum products?

b. List the possible consequences of microbial growth in fuel system.

5a. How do the following groups of microorganisms contribute to oil spills in the Niger Delta of Nigeria?

(i) *Desulfovibrio* species

(ii) Acid producing fungi

b. What are the advantages associated with the use of pre-adapted microorganisms for oil spill bioremediation?

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SCHOOL OF LIFE SCIENCES

DEPARTMENT OF MICROBIOLOGY

FIRST SEMESTER EXAMINATION 2018/2019 SESSION

ENVIRONMENTAL MICROBIOLOGY (MCB 523) 3 UNITS

Instruction: Answer five (5) Questions in all. Attempt at least ONE Question from each section.

Time Allowed: 2½ Hours

Section A

1. Man is the greatest problem of the ecosystem. Discuss this statement, relating it to four (4) distinct elemental cycles?

2. (a). Give reasons why phosphorus is not in the atmosphere?

   (b). How does microbial transformation of sulphur establish the sulphur cycle in nature?

3. (a). Mention 4 groups of microorganisms involved in nitrogen cycle and state their roles.

   (b). Mention 2 ways you would employ to prevent the hazards caused by excessive nutrient influx to water bodies.

Section B

4. Describe the steps used to minimize the risk of microbial contamination in drinking water.

5. (a). Briefly discuss the population of microorganisms in the air.

   (b). Explain any two (2) of the following methods of air analysis:

   (i) Impingement in liquid (ii) Impingement on solid (iii) Sieve and slit method.

Section C

6. (a). Define pesticide.
   (b). Outline the properties of an ideal pesticide.

7. (a). What are biopesticides?

   (b). Itemize the types of biopesticides.

Federal University of Technology, Minna
School of Life Sciences
Department of Microbiology
Second Semester Examination 2018/2019 Session
Pharmaceutical Microbiology (MCB 525) 3 Units

Instruction: Answer four questions in all. Attempt only two questions in each section
Time: 2 hours

Section A

16. (a) Describe the various types of antimicrobial agents

    (b) Highlight the properties of a good chemotherapeutic agent

(c) List 10 routes of administration of pharmaceutical products

17. (a) Make very clean diagrams of the following antibiotics: (i) **Penicillin G** (ii) **Amoxicillin**
(b) Describe 5 African plants and their usefulness in traditional medicine

18. (a) What do you understand by spoilage and preservation of pharmaceutical products?
(b) What factors affect microbial spoilage of pharmaceutical products?
(c) Briefly outline how to control spoilage of pharmaceuticals.

Section B

19. (i) Explain plant tissue homogenization.
(ii) What is its significance?
(iii) How does it differ from serial exhaustive extraction?
(iv) Explain the aim of serial exhaustive extraction.

20. (a) Briefly discuss the various methods available for concentrating extracts.
(b) How would you determine the sensitivity of a microorganism by microbroth dilution method?

21. Briefly explain how the following organisms resist antimicrobial agents:
(a) *Pseudomonas aeruginosa*
(b) Micrococcus luteus
(c) Streptococcus mutans
(d) Streptococcus pneumoniae
(e) Streptococcus pyogenes

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION 2018/2019 SESSION
MCB 526 MEDICAL PARASITOLOGY (3 CREDIT UNITS)
INSTRUCTION: ANSWER ANY FIVE QUESTIONS TIME: 2HOURS 30 MINIUTES

1a. Name four characteristics that are important in parasitism.
b. Give one example each of the following: (i) Endoparasite (ii) Ectoparasite (iii) Blood flagellate (iv) Urogenital flagellate (v) Lung parasite (vi) Liver parasite (vii) Dog tapeworm (viii) Tissue protozoa (iX) Intracellular blood protozoa
1c Describe the procedure for Giemsa staining for a thin blood film

2. Name four filarial worms and describe the life cycle of any of them

3a. Describe the developmental stages of the order Kinetoplastida. Use diagrams to illustrate

3b Why is malaria an important disease in tropical Africa?

4a. Using appropriate diagrams, illustrate the diagnostic features of the following parasites:

(i) Plasmodium falciparum (ii) Entamoeba histolytica (iii) Trypanosoma gambiense (iv) Trichomones vaginalis (v) Leishmania donovani

4b Discuss how parasitic infections can be controlled through environmental sanitation (Be specific).

5. Describe the general life cycle of the Trematodes.

6. Discuss the host and parasite factors that influence the infection of a named parasite

7. Write short essays on the following:

i. Larva migrans
ii. Backyard TRIAD
iii. Giardia lamblia